

NON-PUBLIC?: N
ACCESSION #: 9105070238
LICENSEE EVENT REPORT (LER)

FACILITY NAME: Joseph M. Farley - Unit 2 PAGE: 1 OF 3

DOCKET NUMBER: 05000364

TITLE: Reactor Manually Tripped Following Loss of Steam Generator Feed
Pump

EVENT DATE: 04/09/91 LER #: 91-002-00 REPORT DATE: 05/02/91

OTHER FACILITIES INVOLVED: DOCKET NO: 05000

OPERATING MODE: 1 POWER LEVEL: 034

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR
SECTION:

50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:

NAME: D. N. Morey, General Manager TELEPHONE: (205) 899-5156
Nuclear Plant

COMPONENT FAILURE DESCRIPTION:

CAUSE: B SYSTEM: JK COMPONENT: TBG MANUFACTURER: X999
REPORTABLE NPRDS: Y

SUPPLEMENTAL REPORT EXPECTED: NO

ABSTRACT:

At 2040 on 4-9-91, the Unit 2 reactor was manually tripped following the loss of the operating (2A) steam generator feedwater pump (SGFP). The loss of the SGFP was caused by a failed electro-hydraulic (EH) fluid supply line coupling and subsequent loss of EH fluid. The failure was in the heat affected zone of a tubing-to-fitting socket weld on the EH supply to the high pressure governor valve to the 2A SGFP. Examination of the failed tubing revealed that the failure resulted from cyclic fatigue.

The EH tubing was repaired and all accessible welds on the EH systems on Units 1 and 2 SGFPs were inspected. Vibration readings were taken on the EH tubing connections in the vicinity of the Unit 2 SGFP turbines. Vibration was found on the EH tubing in the vicinity of the failure. The highest vibration occurred during low power plant operation. An

investigation is continuing to determine if additional corrective action is necessary.

The unit returned to power operation at 1648 on 4-10-91.

END OF ABSTRACT

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Plant and System Identification

Westinghouse - Pressurized Water Reactor

Energy Industry Identification System codes are identified in the text as XX!.

Summary of Event

At 2040 on 4-9-91, the Unit 2 reactor was manually tripped following the loss of the operating (2A) steam generator feedwater pump (SGFP). The loss of the feedwater pump was caused by a failed electro-hydraulic (EH) fluid supply line coupling and subsequent loss of EH fluid.

Description of Event

Unit 2 was operating at 34 percent power when the "DEH Trouble Alarm" annunciated. The EH pressure was observed to be slowly decreasing even though the second EH fluid pump was running. The pressure began to decrease at a faster rate and when it reached 1000 psig, the turbine was manually tripped. The operator immediately began to drive in control rods. Seven seconds later the SGFP speed was observed to be 2500 rpm and decreasing. At this time, the operator was instructed to trip the reactor. The reactor was manually tripped at 2040 on 4-9-91. Following the trip, the operators implemented FNP-2-EEP-0 (Reactor Trip or Safety Injection) and FNP-2-ESP-0.1 (Reactor Trip Response), ensuring that the unit was safely in Mode 3 (Hot Standby). The unit was maintained in a stable condition. The EH system JK! supply tubing to the 2A SGFP high pressure governor valve was found to have failed at a welding fitting.

The failure of the EH supply tubing was in the heat affected zone of a tubing-to-fitting socket weld. This weld had been made during the original installation of the EH system and had been in service for approximately 10 years. Westinghouse (W), the supplier of the EH system, was consulted to assist in the determination of the cause of the weld failure. Initially, it was believed that the weld had been made with excessive heat input. The tubing and fitting connection that contained the failed weld was sent to W for analysis. The EH tubing was repaired

and all accessible welds on the EH systems on Units 1 and 2 SGFPs were inspected using dye penetrant testing. Two other welds had indications of excessive heat input and were replaced. The unit was returned to power operation at 1648 on 4-10-91.

The analysis of the failed weld revealed that the crack rapidly propagated from the outside of the tubing and that the failure was due to cyclic fatigue, not excessive heat input as previously believed. On 4-15-91 vibration readings were taken at 100 percent power on the EH tubing connections to the Unit 2 SGFP turbines and no abnormal vibration was found.

On 4-21-91 additional vibration readings were taken with the unit at low power. Higher than normal vibration was found on the EH tubing in the vicinity of the failure. An investigation is continuing to determine if this vibration was the cause of the tubing failure and if additional corrective action is needed.

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Cause of Event

Examination of the failed tubing revealed that the failure resulted from cyclic fatigue.

Reportability Analysis and Safety Assessment

This event is reportable because of the actuation of the reactor protection system. After the trip, the following safety systems operated as designed: main feedwater was isolated by automatic closure of the flow control valves and bypass valves, auxiliary feedwater pumps started automatically and provided flow to the steam generators, and pressurizer heaters and spray valves operated automatically as required to maintain system pressure. The source range nuclear detectors energized automatically.

There was no effect on the health and safety of the public.

Corrective Action

The EH tubing was repaired and all accessible welds on the EH systems on Units 1 and 2 SGFPs were inspected using dye penetrant testing. Vibration readings were taken on the EH tubing connections in the vicinity of the Unit 2 SGFP turbines. Higher than normal vibration was found on the EH tubing in the vicinity of the failure during low power plant operation. An investigation is continuing to determine if

additional corrective action is needed.

Additional Information

The unit returned to power operation at 1648 on 4-10-91.

This event would not have been more severe if it had occurred under different operating conditions.

No similar events have been reported by FNP.

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J. D. Woodard
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Alabama Power
the southern electric system

10 CFR 50.73

May 2, 1991

Docket No. 50-364

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk

Washington, DC 20555

Joseph M. Farley Nuclear Plant - Unit 2
Licensee Event Report No. LER 91-002-00

Gentlemen:

Joseph M. Farley Nuclear Plant, Unit 2, Licensee Event Report No. LER 91-002-00 is being submitted in accordance with 10 CFR 50.73. If you have any questions, please advise.

Respectfully submitted,

J. D. Woodard

JDW/BHW:map 0185

Enclosure

cc: Mr. S. D. Ebnetter
Mr. G. F. Maxwell

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